Mr. John Mott-Smith   *8 October 2004*
Director of Voting Systems
Office of the Secretary of State
1500 11th Street

Subject: Certification Report for the Sequoia Voting Systems
          AVC Edge Firmware Release 4.3.307 with
          Optional VeriVote Printer
          And WinEDS 3.0.134

Executive Summary

State certification testing was conducted 28 Sep-1 Oct 2004, at the Secretary of State Election Division in Sacramento, CA, to certify the Sequoia Voting System's AVC Edge Model I & II Firmware Release 4.3.307 with the optional Voter Verified Paper Audit Trail (VVPAT) VeriVote Printer. The AVC Edge release is supported by WinEDS 3.0.134 which has been certified previously with an earlier model of the Edge.

Review and testing of the Edge 4.3.307 firmware release with WinEDS 3.0.134 showed compliance with the California Election Code with the exception of proper processing of provisional ballots under AB 190 and proper reporting of the separate and aggregate totals for parties allowing DTS voting in the primary election. Due to these outstanding problems, the use of this version is only recommended for one time approval for the November election.

The optional VeriVote Printer does not comply with all of the State of California Standards for Accessible Voter Verified Paper Audit Trail.

References:

[Ciber132] Ciber Report*, Software Functional Test Report Sequoia WinEDS 3.0.132, Original Version 1.0 for WinEDS 3.0.132*, 16 Jul 04.

[Ciber134] Ciber Report*, Software Functional Test Report Sequoia WinEDS 3.0.134, Addendum 2.0 for WinEDS 3.0.134,* 17 Sep 04*.*

[Wyle] Wyle Letter No. 50932B-009 Rev A, *ITA Hardware Qualification Testing of the EDGE Model I/II configured with a Verivote Printer.* 16 Sep 04

[SVF040824] Steve Freeman, *Certification Report for the Sequoia Voting System's WinEDS Ver. 3.0.134, AVC Edge Firmware Rel 4.2A, with Optech 400-C Firmware Rel 1.02b*. 6 Sep 04.

[AVPAT] State of California, *Standards for Accessible Voter Verified Paper Audit Trail Systems in Direct Recording Electronic (DRE) Voting Systems*, 15 Jun 04

Introduction

     In compliance with California Elections Code 19200 and 19205, Sequoia Voting Systems applied for certification for the following revisions:
  1. AVC Edge Model I & II, Firmware Release 4.3.307
  2. VeriVote Printer
With support from WinEDS 3.0.134 (previously reviewed for certification with an earlier version).

Significant Changes in AVC Edge Firmware

  1. Support for the VeriVote Printer.
  2. Preserve the provisional voter ID on voted smart cards.
  3. Allow poll workers to specify audio voting mode when activating a smart card.
  4. Revised how the ballot review screen presents undervotes in a multiple "vote-for" contest.

5. Support for printing multiple copies of results reports.
6. Changes in checking clock status and stopping AA battery voltage monitoring.

Outstanding Issues

The WinEDS and AVC Edge security were reviewed in Aug 2004.   Updates were made to the State of California Procedures Required for the Use of the AVC Edge Direct Recording Electronic Voting System to include attention to the system security. The new provisions include the need for an anti-virus program to be installed and used and the recommendation for a security monitoring package, First Sentry Agent, to assist in controlling access to the WinEDS server. Neither the anti-virus detection software nor First Sentry Agent was included in the certification test environment. Other suggestions involved identifying for the local IT agent responsible for computer security what Windows 2000/XP security features may be used and which features or services may be removed or disabled without interfering with the WinEDS operations.

During previous testing [SVF040824] of the provisional voting using the AVC Edge DRE, the provisional ballot for a split precinct could not be assigned to the split. A write-in candidate on a split ballot was not recognized. Although provisional ballots on this system are to be submitted as paper ballots on the upcoming election, this problem fails to satisfy the criteria of AB 190 for further elections. For this test, that problem was acknowledge by Sequoia as not resolved in this list and was not tested further although provisional ballots were cast to verify that they were being recorded correctly and identified on the paper receipt copy. At the current time, the provisional ballots are expected to be handled as paper ballots and not processed through this feature.

WinEDS does not support the reporting of aggregate and separate totals for primary parties who allow Decline-To-State voters to participate [SVF040824]. Sequoia presented in a later test presented to Election Division staff a utility called ReportViewer to process the results from WinEDS and produce the desired report. This capability was not tested at this time.

Qualifications

NASED Qualification
1. WinEDS 3.0.132, NASED # N 1-07-12-11-004 (1990), 07/16/04
    includes:
    a. AVC Edge Models I & II, Firmware Release 4.2
    b. Optech 400-C, WinETP release 1.02b
    c. Card Activator Revision E, 4.32
    d. Card Reader/Writer
2. AVC Edge Firmware 4.2a, letter of completed testing only
3. WinEDS 3.0.134, NASED #

At the time of this report, the final report on the Edge 4.3.307 and the VeriVote has not been released. A letter reporting completion of testing was referenced in the application but the testing was limited to 1990 Voting System Standards (VSS) in several important aspects and it is not clear what the outcome will be. In particular, the 1990 VSS is missing the more stringent accessibility standards of the 2002 standards and has a condition requiring that any ballot images stored by a DRE have to be stored in random order which the VeriVote does not satisfy.

Test Results

The test election was based on the San Diego 2002 Primary and General with the addition of Presidential race (with semi-fictional candidates to complete the General election) in seven political parties. Three parties, American Independent, Democratic, and Republican, were defined as allowing DTS voter participation and reporting with the Republican DTS not permitting participation in Presidential nominations (See details in Attachment D). In addition to a specific review of the VeriVote compliance with the State of California standards [AVPAT] in Attachment B, a list of minor observations including some issues that may need to be addressed in the California Procedures.

VeriVote Printer

The VeriVote Printer was enabled and checked through the entire Primary election test and one unit was used in checking issues with a third language in the General election test. The VeriVote unit has gone through some substantial development and testing to bring its reliability and durability up to a high level. However, it fails to meet several requirements under the State of California standards specified in [AVPAT]. Attachment B has extracts of the principle clauses from the [AVPAT] and comments or findings for each requirement listed. In summary, the following requirements are not met:

1. [AVPAT, 1.2]. *A voter using the audio ballot has no ability to verify his or her selection.*

2. [AVPAT, 2.1 Secrecy]. *The paper record copy is stored sequentially on the take up roll. The record for a voter can be identified based on the order in which the voter used the DRE, information that can be determined from the public counter and reported by the voter to a 'vote buyer' or by an observer at the polling place checking voter lists.*

3. [AVPAT, 2.1.6 Language Accessibility] *The VeriVote does not have the capability of recording the vote in languages requiring bit-mapped ideographic characters or using 16-bit Unicode/UTC character sets supporting such languages. In the Chinese language test, the VeriVote printer could only print the records in English, as an example.*

4. [AVPAT, 2.3.4.2 Dual Language] *Only a single language is printed on each record where this standard requires English to be printed in addition to any alternate language. In the Spanish language test, only the Spanish was printed.*

5. [AVPAT, 2.4.2 Readability] *The review screen is removed from the display before the paper record is printed. The voter can not directly compare the review screen and the paper copy.*

6. [AVPAT, 2.4.3.1.1 Audio] *The audio component reports the vote selection and review screens but does not report what is on the paper record copy.*

7. [AVPAT, 2.4.3.1.2 Audio] *The audio component does not have access to the data sent to the printer.*

Another point is accessibility in terms of readability. The 2002 Federal Voting System Standards (VSS) for display accessibility for those with impaired vision were not applied in the qualification testing performed against the Edge and VeriVote Printer. The Edge Firmware Release 4.3.307 does not meet with 2002 VSS on this requirement. It is not clear whether the VeriVote printer would as there are issues of how to apply the standards to the paper records display.

Conclusion

Review and testing of the Edge 4.3.307 firmware release with WinEDS 3.0.134 showed compliance with the California Election Code with the exception of proper processing of provisional ballots under AB 190 and proper reporting of the separate and aggregate totals for parties allowing DTS voting in the primary election. Due to these outstanding problems and some others, the use of this version is only recommended for one time approval for the November election.

The optional VeriVote Printer does not comply with all of the State of California Standards for Accessible Voter Verified Paper Audit Trail.

Sincerely,

Steven V. Freeman

Four Attachments:

A. Hardware Description with a list of the test configuration components.
B. VeriVote Compliance with California Standards
C. Other Observations
D. Test Election Design

Attachment A

## Hardware Descriptions

WinEDS

WinEDS can be installed on one to three PC-compatible basic units, the WinEDS database server managing a MS SQL 2000 database, a WinEDS workstation (may be networked for multiple workstations), and a WinEDS Report server. For more details on that setup, refer to the [SVF031005], App A and B. For this test, all three components were installed and operated on the same workstation unit used in the prior test [SVF040824]

AVC Edge

The AVC Edge comes in two models: the Model I (formerly identified as Hardware Version 3.1, M/N 096000011) and Model II (formerly identified as Hardware Version 4.0, M/N 096000021). The AVC Edge is a touch screen Direct-Record Electronic (DRE) voting machine. See [SVF031009] for details. For this test, the units listed below were used.

VeriVote Printer Unit.

The VeriVote Printer Unit replaces the internal log printers with a larger, faster printer which is mounted as a separate component on the left side of the Edge.
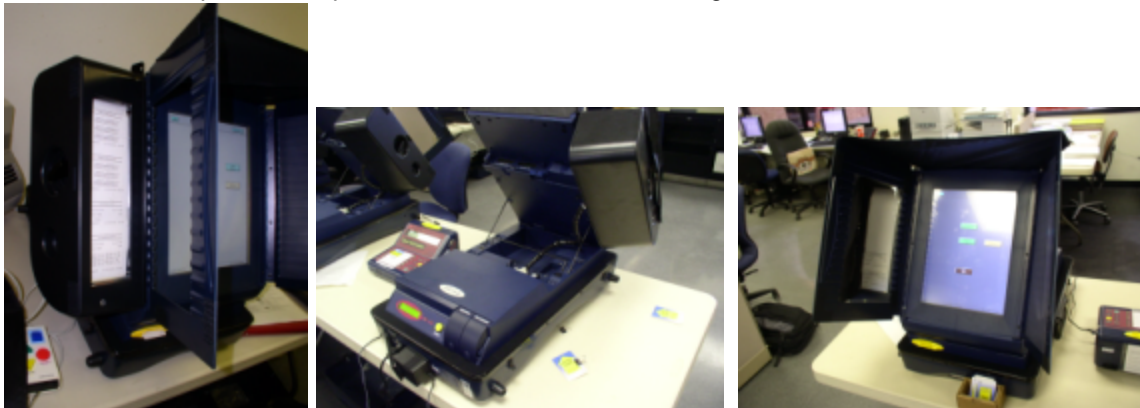
The power and data connections replace those used by the internal log printer. The unit can hold a 300 foot roll of paper which passes between a base plate and a transparent panel in the front of the unit and rolls up on a take up reel with a removable cylinder that can be removed once the tape is full. The transparent opening is approximately 12 inches long; if the ballot is too long to be seen under the window, the printer will pause and allow the voter to review the page then pass on to the next page until the entire ballot has been reviewed. The security panel on the left side of the Edge has an opening for the voter to view the paper record with a velcroed curtain from the left edge of the security panel to the left edge of the printer unit providing as a security screen for the privacy of the voter. The VeriVote unit has tabs or lugs which are designed to take a small lock or wire seal (numbered) to secure the unit. The tabs are positioned to seal the unit so the paper tape can not be removed or tampered without detection and a separate set of tabs which seal the unit to the Edge DRE.

Test Configuration

WinEDS Election Management Software
    Version 3.0.134

Server/Workstation Configuration:
    Dell OptiPlex SX260, S/N 8K2P831
        2.40 GHz Intel Pentium 4 processor
        256 MByte RAM
        40 GB Hard Drive
        CDRW/DVD Drive
        (no printer attached. Used Adobe Distiller to save output)

        MS Windows XP Professional, SPK1 (with SPK2 partial patches)
        MS SQL Server 8.000.760
        Microsoft Office XP 10.0.2627
        Microsoft Visio Professional 2002 –SR1
        Adobe Distiller/Acrobat 6.0.0
        Intellidiv ImageScaler 6.41
        Powerbuilder (Common Files Dir)
         WinZip 8.1 (for installation of software packages)
        AnTec USB drivers for PCMCIA Memory cartridges
        --used for supporting AVC Edge/Card activators
        NCT Audio to support audio files.

        Report Viewer 1.0.28

 Card Activators
        S/N   2067 Firmware 4.3.307
        S/N 4870   Firmware 4.3.307

Card Reader/Writer: S/N 0004

Sequoia AVC Edge, Firmware Release 4.3.307

S/N	HW Ver	VeriVote Printer	Prim Prec	Gen Prec	Options
22140	4.2.4	03481	EV		Receipt#=3
22124	4.1.F	03438	Precinct 1		Receipt#=3
34120	4.1	03444	Precinct 2	All	Audio, reject#=inf
34131	4.1	03222	Precinct 3		Receipt#=3
20673	3.2		Precinct 4	All	Multiple copies(Gen) Receipt#=3
21136	3.2		Precinct 5		Receipt#=3

VeriVote Options (includes log printer options also):
- Report Style – by ballot
- Printed Report Destination – printer
- Results Report Copy – 1 (one printer was set up with this set to 2 to very multi-copy option change)
- Review Button on Each Page – Yes
- Show Review Button on Cast Ballot Page – Yes
- Required Review Screen at end of Ballot – Yes
- User Select Audio Language – Yes
- Printer Type – VVPAT

- VVPAT Receipts Per Voter – 3 (one DRE was set to infinite to test response)
- VVPAT BarCode Type - ? (Yes)
- VVPAT Print Receipt in Voter Simulation – No
- VVPAT Print Candidate IDs on Receipt – No

Attachment B

Voter Verified Paper Audit Trail

The following standards are extracted from the State of California, *Standards for Accessible Voter Verified Paper Audit Trail Systems in Direct Recording Electronic (DRE) Voting Systems*, 15 Jun 04 [AVPAT]. Many of the standards listed repeat or are simple refinements/extensions of an earlier requirement so frequent duplication occurs.

> 1.2 Operation: AVVPAT systems may be designed in various configurations. In all such devices, upon completion of selecting his or her contest choices on the DRE, the voter shall have the ability to verify his or her selections on a paper record copy. *Exception*
> *A voter using the audio ballot had no ability to verify his or selection.*

> During the verification, the voter shall either accept or reject the choices represented on the paper record copy. *Exception*
> *A voter using the audio ballot had no ability to accept or reject the choices on the paper ballot.*

> Upon the completion of the verification process, both the electronic record and the paper record copy shall be stored and retained. *Confirmed*

> 2.1.1.1 Every electronic record must have a corresponding paper record copy. *Not Confirmed*
> *The test did confirm each ballot was correctly printed and that the resulting totals matched the counts from the paper receipts. Also confirmed that the counts matched the results stored on the result cartridge and uploaded to WinEDS and on the audit cartridge should an audit cartridge be saved.*

> > 2.1.1.1.1 The paper record copy must be printed and the voter must have the opportunity to verify that record prior to the electronic record being recorded. *Exception*
> *A voter using the audio ballot has no ability to verify his or selection.*

> > 2.1.2 Privacy: The AVVPAT system shall be designed to allow every voter to review, accept or reject his/her paper record copy privately and independently and shall comply with federal and state privacy requirements. *Exception*
> *A voter using the audio ballot had no ability to verify his or selection. The paper copy was printed but no audio report of its contents are provided.*

> > 2.1.3 Secrecy: The AVVPAT system shall be designed to ensure secrecy of votes so that it is not possible to determine which voter cast which paper record copy and shall comply with federal and state secrecy requirements. *See Comment*
> *The paper record copy is stored sequentially on the take up roll. The record for a voter can be identified based on the order in which the voter used the DRE, information that can be determined by the voter from the public counter or by an observer at the polling place. The Federal Election Commission (FEC) Voting System Standards (VSS) for 1990 (used to qualify the Edge) requires ballot image records be stored in random sequence to meet this requirement. The newer 2002 VSS requires the anonymity of the voter to be preserved but does not require random storage.*

> > 2.1.4 Readability: The AVVPAT system shall be designed to maximize the ease in which the voter may review, accept or reject his/her paper record copy and shall comply with federal and state readability requirements. *See Comment*

The 1990 VSS which this device was tested under does not have a testable readability requirement. The device has not yet been tested under the 2002 VSS requirement for accessibility.

2.1.5 Accessibility: The AVVPAT system shall be designed to allow access for disabled and limited literacy voters to privately and independently use the AVVPAT and shall comply with federal and state accessibility requirements.   *See Comment*
The 1990 VSS which this device was tested under does not place a readability requirement. The device has not yet been tested under the 2002 VSS requirement for accessibility.

2.1.6 Language Accessibility: The AVVPAT system shall be designed to allow each voter to verify their vote on a paper record copy in the same language they voted in on the DRE and shall comply with federal and state requirements.   *Exception*
The VeriVote does not have the capability of recording the vote in languages requiring ideographic characters or using extended Unicode. As implemented, the VeriVote was only tested with English and Spanish. For testing, a third language, Chinese, was used but the VeriVote could only print the ballots in English. Note that, for some languages with no printed equivalent, English is a default standard for the printed copy.

2.1.7 Security: The AVVPAT system shall be designed to prevent tampering with either the AVVPAT system or the paper record copy, and shall comply with federal and state security requirements.   *See Comment*
The VeriVote printer unit is equipped with lugs designed to allow the device to be locked or sealed so the internal paper tape can not be removed, replaced, or tampered with without evidence of tampering. However, the unit can be dismounted and replaced with another unit or even swapped between DREs without detection other than by direct and constant observation.

2.2.1 Security: Security protections shall be built into the paper record copy and/or AVVPAT-S to prevent tampering.   *See Above Comment*

This provision shall apply to paper record copies before, during and after printing.
The only provision is maintaining the chain of custody of the sealed VeriVote printer unit until the paper records are removed from the unit and the sealed view port through which the voter views the record. The event log and summary report will identify the number of records but not the number of rejected vote records.

2.2.2 Readability: The paper shall be designed so as to make the paper record copy readable by voters and election officials and shall comply with federal and state readability requirements.   *See Earlier Comment*.

2.2.3 Capacity: For each statewide election, the elections official shall provide a sufficient number of paper record copies in each precinct to reasonably meet the needs of the voters in that precinct.   See *Comment*
A VeriVote Printer can hold a maximum near 225 ballots per roll for a single contest election down to approximately 157 ballots for a 20 race ballot with no rejected records; initial use in a Nevada election did not show a high rate of rejected records but a margin should be allowed for some. Verivote printer units can be replaced if expected to remain sealed or opened and a fresh roll installed.

2.2.4 Retention: The voter verified paper record copy shall be retained by the elections official for the same period of time as mandated by state and federal law for the retention of paper ballots for that election.   *Procedure Required*

2.3.1 Security: The printer shall be physically secure from tampering. *Procedures Required*

The paper record copy and the image created by the AVVPAT-W on the paper record copy shall be designed to withstand storage requirements as outlined in these standards and federal and state requirements. *See Comment*
Specifications provided by the vendor show an expected storage life of three years provided the records are not exposed to temperature outside of a limited range, humidity, excessive exposure to ultra-violet, and chemical compounds found in some office supplies.

2.3.3.1 Offices/Measures: The image created by the AVVPAT-W shall include every contest that is displayed to the voter on the DRE review screen. *Confirmed*

2.3.3.2.1 Candidates/Measures: The image created by the AVVPAT-W shall include every valid selection made for each contest as selected by the voter. *Confirmed*

2.3.3.2.2 Write-in: The image created by the AVVPAT-W shall allow for write-in candidates as mandated by state law. *Confirmed*

2.3.3.2.3 Undervote: The image created by the AVVPAT-W shall provide information on the contests for which the voter has not made a selection. This shall not replace the requirement that the DRE notify the voter on the DRE in the case of any undervote.
Confirmed

2.3.3.3 Provisional Ballot: The image created by the AVVPAT-W shall be clearly identifiable in the case of a provisional ballot. *Confirmed*

2.3.3.4.1 The image created by the AVVPAT-W shall be clearly identifiable in the case of a spoiled paper record copy. *Confirmed*

The clearly identifiable spoiled paper record copy shall be shown in the paper record display unit to allow the voter to acknowledge the paper record copy has been spoiled. *Confirmed*
The audio voter does not have an option for spoiled ballots.

The AVVPAT system shall be designed to prevent a paper record copy from being spoiled after the voter has verified that paper record copy. *Confirmed*
Although optional, the bar-code printed when the ballot is accepted provides a check and validation against an attempt to modify the record.

2.3.3.4.2 The voter shall have the opportunity to affirmatively spoil their paper record copy no more than two times. *Confirmed*
The number of times is optional but is to be set as a default for California

An error in recording or printing a paper record copy not caused by the voter shall not be counted as a spoiled paper record copy.
See Comment
Only one error was created (power interrupt caused by disconnecting printers power cable) and it did not result in the ballot being voided (spoilt). The error resulted in only 1.5 lines of print (one contest result). The condition requires a difficult and deliberate effort to reach around and remove a cable and does not affect the final results.

2.3.3.4.3 Upon spoiling their paper record copy the voter shall be able to modify and verify selections on the DRE without having to reselect all of their choices.   *Confirmed*

2.3.3.4.4 Before the voter causes a third and final paper record copy to be printed, the voter shall be presented with a warning notice that the selections made on screen will be final and the voter will see and verify a printout of their vote, but will not be given additional opportunities to change their vote.   *Confirmed*

2.3.4 Language Accessibility

2.3.4.1 The AVVPAT-W shall be capable of producing an image in all alternative languages for which the DRE is certified.   *See Earlier Comment*

2.3.4.2 The paper record copy shall be printed in English and in the language the voter used to cast their vote on the DRE.   *Fails*
Only a single language is printed on each record. In the Spanish language test, only the Spanish was printed.

2.4 Paper Record Display Unit

2.4.1 Security: The paper record display unit shall allow the voter to inspect the paper record copy without physically handling the paper record copy and shall be physically secure from tampering.   *Confirmed*

2.4.2 Readability: The paper record display unit shall provide adequate visual space to allow the voter to privately and independently inspect the paper record copy.
                                                                                  Confirmed

 A paper record copy shall be readable from the same position and posture used for voting on the DRE.   *See Earlier Comment*

The voter shall have the ability to view both the review screen on the DRE and the paper record copy in the display unit simultaneously.   *Fails*
The voter must request the printed receipt in an action that removes the view screen from view. If the voter rejects the ballot, the voided paper record can be seen when the display returns to the review screen but the paper copy to be accepted can not be compared directly with the review screen.

 If the paper record copy cannot be viewed in its entirety in the paper record display unit at one time, then the voter shall have the opportunity to verify the entire paper record copy prior to either the electronic record or the paper record copy being stored and recorded.   *Observed in a previous test*

2.4.2.1 Covering: Any protective covering intended to be transparent shall be in such condition that it can be made transparent by ordinary cleaning of its exposed surface.   See *Comment*
The transparent cover can be cleaned of smudges and surface dirt. No information is available on resistance and ease of recovering from scratches and etching effects.

2.4.3 Accessibility: The AVVPAT components must conform to federal and state accessibility requirements.

2.4.3.1 This shall include, but is not limited to, an audio component.

2.4.3.1.1 The audio component must accurately relay the information printed on the paper record copy to the voter. *Fails*

The audio component supports the vote selection and review but does not report what is on the paper record copy.

2.4.3.1.2 The data relayed to the audio device must come either directly from the data sent to the printer or directly from the paper record copy. *Fails*

The audio component does not have access the data sent to the printer.

2.5 Paper Record Storage Unit

2.5.1 Security: The Paper Record Storage Unit shall be designed to prevent tampering. *Confirmed*

2.5.2 Secrecy: The AVVPAT system shall be designed to ensure secrecy of votes so that it is not possible to determine which voter cast which paper record copy. *See Earlier Comment*

2.5.3 Capacity: The combined capacity of all the paper record storage units in a precinct must be enough to accommodate all voters using the DREs within the precinct. *See Earlier Comment*

3.1 Update: Testing and pre-election, election and post-election procedures for each DRE voting system shall be updated to reflect the use of the AVVPAT. *Procedures Pending*

Attachment C

Other Observations:

The following document minor points or test observations that may require attention in the California Procedures which are to be updated:

1. One of the Card Activators started beeping and locked up, accepting but not releasing a new Voter Card. Testing indicated that one of the keys appeared to be stuck. When the some keys were pressed, the problem cleared. Although the problem did not seem significant, the operational procedures are to provide instructions to the poll workers to recognize and clear the event.
2. WinEDS is stopped from operating if MS Word is open when WinEDS is entered. WinEDS only tolerates a copy of MS Word which has been opened by WinEDS itself.
3. Paper did not advance so previous voter receipt could not be seen by next voter. A setup option, used for high-volume testing to save time and paper, was turned on to disable the paper advance feature.
4. A change language button was enabled at the bottom of each voter screen. Not seen in previous tests. Allows voter to change the language while working on the ballot. Tested by starting ballot in Spanish, changed to change several vote choices in English, then changed back to Spanish to cast the vote and see the paper copy print in Spanish.
5. Paper jammed only once. Removed cover and released jam; the VeriVote adjusted automatically. However, if the VeriVote is sealed in election operation, this technique may not be allowed. No other jams occurred and Federal ITA testing reports indicate the incident of jamming has been reduced significantly.
6. Cast Ballot button changes position from left on ballot cast screen to right on accept screen. This is a design feature to avoid a rapid double touch of the Cast ballot button skipping past the option to reject the ballot and go back to correct it.
7. Inserting voter card but not pushing it in all the way or using a second card to pull out an inserted card results in the voter choices been reset without casting the ballot.
8. Tested end of paper condition. The paper-end condition occurs with enough paper on the roll to allow one long ballot to finish.
9. Performed tests for voter behavior that, in previous versions, have resulted in screens being skipped or changed too fast (such as double touches) but button selections were protected from false responses.
10. Shut down Early Voting (EV) DRE overnight and brought it up in an Early Vote restart without any problems.
11. VeriVote font is reduced in size to about 2.5 mm for zero total reports when tape roll removed after Election Day test run. This is the default font size for the printer; the VeriVote normally works in a larger font size of about 3 mm but can reset automatically if power interrupted and after some service operations on the printer. If this occurs during an actual paper receipt print operation, slightly less than 2 lines may not get printed (a half line is not unusual). This problem was demonstrated during the test where the power cable was removed; the candidate (who received the vote) name was not printed on the paper receipt. The paper receipt is incomplete but the ballot can be rejected or, if accepted, the totals are do not lose the missing candidate's vote.
12. Statement of Votes Cast report started after resolution of write-ins and provisional ballots. Since there was no printer attached, the file was sent to Adobe Distiller to produce a .pdf file. The operation failed. It started opening a series of Excel windows followed by system error pop-up windows. Stopped the operation and shut down a number of open windows. When restarted, experienced no problems. For security reasons, during operation all other activity or programs other than security monitoring should be stopped.
13. The new Multiple Report copy option is set in the Machine Type Maintenance option screen used to setup VeriVote options. The feature automatically prints the number of multiple

copies programmed for the result report one time when the polls closed. Additional copies may be requested manually after the initial set of reports are done.

14. During power disconnect tests, there was no alert message saying the printer is down or not responding. The screen just waits until the problem is noticed. This is especially frustrating in the audio ballot mode as the voter doesn't even have a message telling it that the printer should be printing.

Attachment D

Test Election Design

Type	Precinct	1	2	2	3	4	5
Type	Split		1	2			
SW	Federal, STATE	x	x	x	x	x	x
SD	Board of Equal 3	x	x	x	x	x	x
SD	CONGRESS 49	x	x	x			
SD	CONGRESS 50				x	x	
SD	CONGRESS 51						x
SD	CONGRESS 52						
SD	CONGRESS 53						
SD	STATE SENATE 36	x	x				
SD	STATE SENATE 37				x		x
SD	STATE SENATE 38			x		x	
SD	STATE SENATE 39						
SD	STATE SENATE 40						
SD	ASSEMBLY 66	x					
SD	ASSEMBLY 74				x		
SD	ASSEMBLY 75		x	x			
SD	ASSEMBLY 76						x
SD	ASSEMBLY 77					x	
U	COUNTY, Unincorporated		x				
C	CHULA VISTA			x			
C	LEMON GROVE	x					
R	PORTER VISTA					x	
S	Measures 40,	x	x	x	x	x	x

Further details on test election makeup and useage:

The test election was modified from the San Diego by combining various districts and races into a selection of ten precincts which concisely included samples of state, statewide district (State Senate and Assembly Districts), judicial,   (See Test Design Matrix above)

A total of over 404 (290 with manual vote entry) primary ballots and over 8 general ballots were cast.exercising the following ballot logic and conditions:
- Primary party ballots with DTS voting and reporting
- Non-Partisan races
- Split precinct
- Vote for 2 of 5,
- Write-in votes (including potential over-vote conditions)
- Blank ballots
- Rotation based on assembly district at state, state districts, and local levels

- Multiple languages. English, Spanish, and (in the General test election only) Chinese
- Measures, both state-wide and local
- Polls open, close, and report printing.
- Review of audit logs.
- Election Day precinct voting, including shutting down and bringing back up in the morning.
- VeriVote records rejected, changed, and accepted one and two times (the final acceptance is automatic).

Anomalous voter actions which can create reports of problems:
- Double taps on the touch screen
- Sliding the finger between target points
- Touching inactive parts of the screen
- Repeated changes, going back and forth between review screen and specific contests or navigating between pages
- Disconnecting power to the printer
- Pressing exposed reset button

Four audio ballots were cast to confirm the ballot navigation and all contests/candidates were included for four ballot styles, the Dem Declared voters, Dem DTS, Rep Declared, and Rep DTS voters. The testing included English and Spanish. An additional eight audio ballots were cast in the General election using English, Spanish, and Chinese for both VeriVote and non-Verivote equipped Edges. These tests do not guarantee the audio files are correct but do confirm they are defined and linked correctly.

After elections were run and results downloaded, we went back to all of the AVC Edges and recovered the election files retained in internal memory onto Audit Cartridges then verified the results off the original cartridge and the audit cartridge were the same.